Science Teachers Association of Nigeria

RESOURCES FOR SCIENCE, TECHNOLOGY, AND MATHEMATICS (STM) EDUCATION

STAN

Proceedings of the 47th Annual Conference 2006

UCHENNA NZEWI
Editor

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PREFACE

It is my honour and privilege to present to our dear STAN members and other members of the academic community our highly referred and published conference proceedings for year 2006. In the usual tradition of STAN, this book is being published ahead of the conference to enable our members be active participants in this year's conference.

The theme of this year's conference is *'Resources for Science, Technology and Mathematics (STM) Education'*, while the sub-themes are:

(a) Status of Resources for STM Education
(b) Supply of Resources for STM Education
(c) Human Resources Development for STM Education
(d) Management of Resources for STM Education
(e) New Technologies as Resources for STM Education

Call for papers was made in August 2005 and papers were invited as contributions to the four sub-themes and for presentation at the following subject panels: Agricultural Science; Biology; Chemistry; Environmental Education; Home Economics; Gender and STM; ICT; Integrated Science; Mathematics; Physical and Health Education; Physics; Primary Science; Science-Technology-Society; Teacher Education, and Technology Education.

Papers were subjected to a rigorous blind review process and the succesful papers are the ones published. More than 150 papers were received and reviewed. There was a lot of improvement in the quality of papers received and reviewed this year when compared to those of 2005. The major problems in the rejected papers are as follows:

Data Analysis:
Some authors used wrong/inappropriate statistics, their findings could therefore not be supported. The most common error in data analysis observed was the use of *percentages* when *means* would have been more suitable.

Citation within text and References
Many writers still do not know how to make citations within text and subsequently, how to reflect all sources cited in their references. This was particularly so for those who cited secondary sources. In some cases, our editors corrected some of these and the papers were still published. But in the cases where the papers could not be salvaged, they were rejected.

Literature review
Related to the problem of poor citation was wrong/inappropriate review of literature. Some authors reviewed materials that are not related to their study and hence were not able to relate their findings to the materials they had reviewed. This left some authors just presenting their findings and not being able to discuss them.

Abstract
There were some authors who could not write abstracts for their papers. Some others wrote very bad ones that were not in any way related to the contents of their papers.

Some panels may be disappointed that the papers scheduled for presentation in their panels are either too few or that none was scheduled for presentation. This is because members of such panels either wrote no papers or wrote poor quality ones. In this regard, we want to commend members of the biology panel for the high quality and quantity of papers they submitted.

We encourage other panels to make out time within their panel meetings or national workshops to teach their members the rudiments of writing good research papers. We also invite our members to take advantage of the series of workshop being run by Abonyi and Nzewi on writing research papers. These workshops series which started last year will run for sometime until more of our members acquire the required writing skills.

On behalf of the editorial team of STAN, I thank all those who responded early to the call for papers. I apologise to those whose papers were not considered for publication because they arrived late. I encourage us all to start now to think and develop our papers for Sokoto 2007, so that by early 2007, we will send them to the secretariat for publication consideration.

I wish you all a fruitful conference.

Uchenna Mariestella Nzewi
Editor-in-Chief

PAPER 72

UNDERGRADUATE SCIENCE EDUCATION STUDENTS' ACCESSIBILITY TO AND UTILIZATION OF INTERNET FACILITIES

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and

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Abstract

Internet has become a large source of knowledge and has pulled down borders and barriers to teaching and learning of science. With this benefit among others, it is expected that if this resource is accessible to students, the paucity of scholarly literature should have been tackled. This study therefore delved into the extent of accessibility to and utilization of the internet facilities by undergraduate science-education students in Lagos State. 200 undergraduate science-education students in 300 and 400 levels of two Universities in Lagos State participated in the study. A self-developed questionnaire [r=0.89] was administered for the purpose of data collection and the data collected were analysed using bar and pie charts, Rank order and Chi square. Findings revealed that Internet facilities are quite accessible to the students, but the students use it only occasionally and least use it for academic purpose.

Introduction

Resources are the inputs, which help meaningful attainment of lesson objectives (Hanson, 1975). Resources can be classified into human (personnel) and materials. Human resources in science teaching and learning include science teachers, laboratory assistants and other supporting staff who contribute to the achievement of science objectives. Material resources on the other hand, refer to equipment and the instructional materials, which the teacher can use to help in the achievement of the lesson objectives.

The type of instructional materials range from textual (print) materials (textbooks, science journals, monographs, pamphlets, magazines etc) to non-textual materials (audio-visual aids). Of all material resources, textual materials are most familiar and commonly employed by students and teachers. These are veritable source of information and knowledge to students. Most students have access to these textual materials either by purchase or in the library. Availability and accessibility is however hampered by scarcity of fund.

At the tertiary level of education, the academic task presupposes that students should have increase access to relevant and qualitative resource materials. To achieve this, students rely heavily on the library. The library is the repository of knowledge. Adewale and Adesanya (2003) opined that, the collection of books of both reference and general, technical reports, periodicals, collections of newspapers, magazines, journals, conference proceedings and the like makes a library. Joel-Ikokoh (2005) however observed that school libraries in Nigeria are neither properly staffed nor stocked with relevant resources. The traditional method of acquisition, documentation, circulation and maintenance of library materials and other services is tedious, time-consuming and slow. These have culminated in the unnecessary delay in fulfilling library services to users.

A recurrent theme in the school library literature of 1980s and 1990s was the necessity for innovative solution to the inadequate school library services in Nigeria. The Internet provides the best alternative platform for sharing knowledge. It is the largest storehouse of information. Today, Internet has become a large source of knowledge at reduced cost. Other benefits of the Internet include fast access to current reference materials, allows increased and intensive interaction among learners thereby developing their research and study skills. No doubt, Internet has pulled down borders and barriers to teaching and learning of science generally.

Effective learning in science according to Nwosu (2003) occurs when learners develop the ability to purposefully access information from a variety of sources, analyze and evaluate the information and then integrate it to construct a personal knowledge base from which to make intelligent decisions. All these are made possible by the Internet.

Internet can be used in a variety of forms. It capabilities include the following:

E-mail:	Supports person to person messages.
Entertainment:	Users of Internet can relax with various forms of interactive conversations, games news and sports.
Academic Materials:	Reservoir for wide spectrum of academic work.

With these arrays of benefits to students, it is expected that the paucity of scholarly literature should have been tackled. Ezeliora (2003) however observed that Nigerian education system has not availed herself of this unending valuable use of the Internet. This has therefore generated the curiosity to inquire about the accessibility to and utilization of the Internet facilities by undergraduate science educations students in Lagos State. Specifically, the study sought to determine:

(a) whether Internet facilities are easily accessible to students.
(b) frequency of use of Internet by students.
(c) purpose of visiting Internet sites.
(d) benefits accruable from students use of Internet
(e) gender difference in the purpose of using the Internet.

Methodology

A descriptive – survey design is employed in the study. It describes and analyses undergraduate students access to and utilization of the Internet. The population included undergraduate science education students from the two universities (University of Lagos and Lagos State University) in Lagos State.

200 students were drawn from 300 and 400 levels by simple random sampling technique. These categories of students were involved because rigorous academic demand and high level of consultation is required for good performance at this level.

Distribution of students according to cohort was as follows: Biology education (40), Chemistry education (40), Physics education (20), Mathematics education (40), Physical education (40) and Health education (20). Total number of students in each cohort varies hence; equal representation of sample per cohort could not be achieved.

An instrument titled Questionnaire on Students' Accessibility to and Utilization of the Internet (QSATUI) was administered among the students. This was a structured questionnaire divided into two sections (A & B). Section A sought demographic (sex and level) data of the respondents. Section B inquired into the following: The location of Internet facilities how frequently students access the Internet. Students were also requested to rank the benefits derived from their use of the Internet.

Copies of the instrument were given to four colleagues for the purpose of validity; their suggestions were, however considered in the final draft of instrument, which was further subjected to test-retest method [within an interval of two weeks] to ascertain its reliability; Pearson's Product Moment Correlation Coefficient's result gave a value of 0.89.

The instrument was thereafter administered and data collection was carried out personally by the two researchers and this lasted for 4 days.

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Results

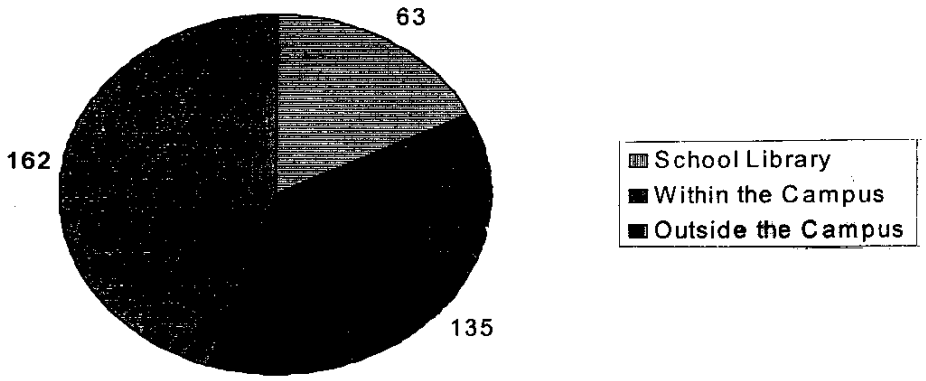

Figure 1: Pie-Chart showing students' responses to internet site

Figure 1 shows that large proportion [162°] of the students access the internet outside the University campus. Also fairly large proportion [135°] access the internet within the University campus, while the school Library received little patronage [63°].

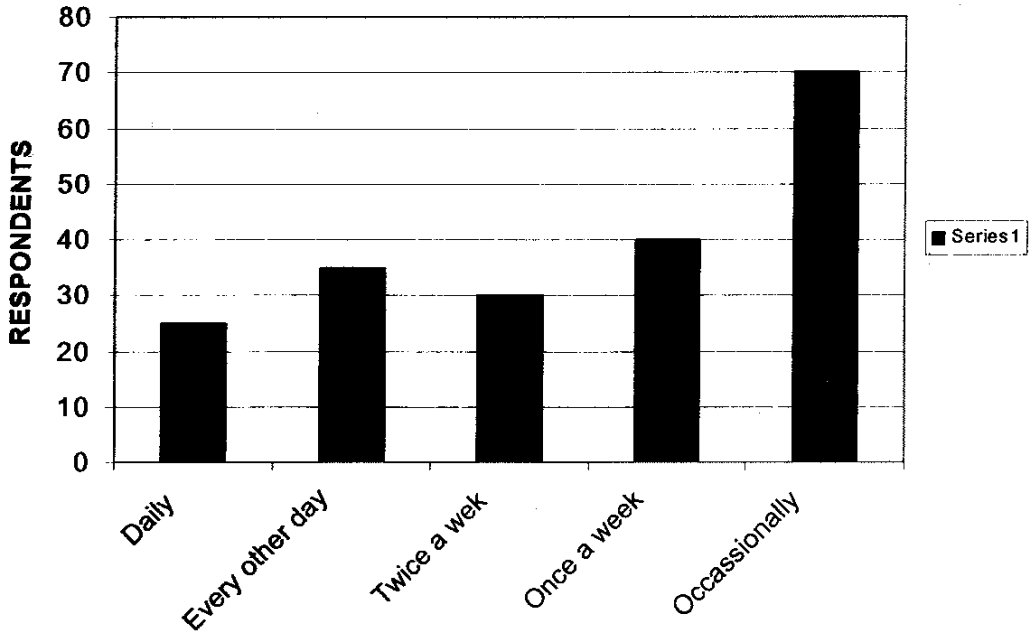

Figure 2: Bar-Chart showing frequency of use of internet

Figure 2 shows that majority of the students access the internet occasionally. Also daily access of the internet is least favoured by the students. The figure further revealed an ordered trend, which shows an increase in number of students who access the internet as the successive time interval by day increases.

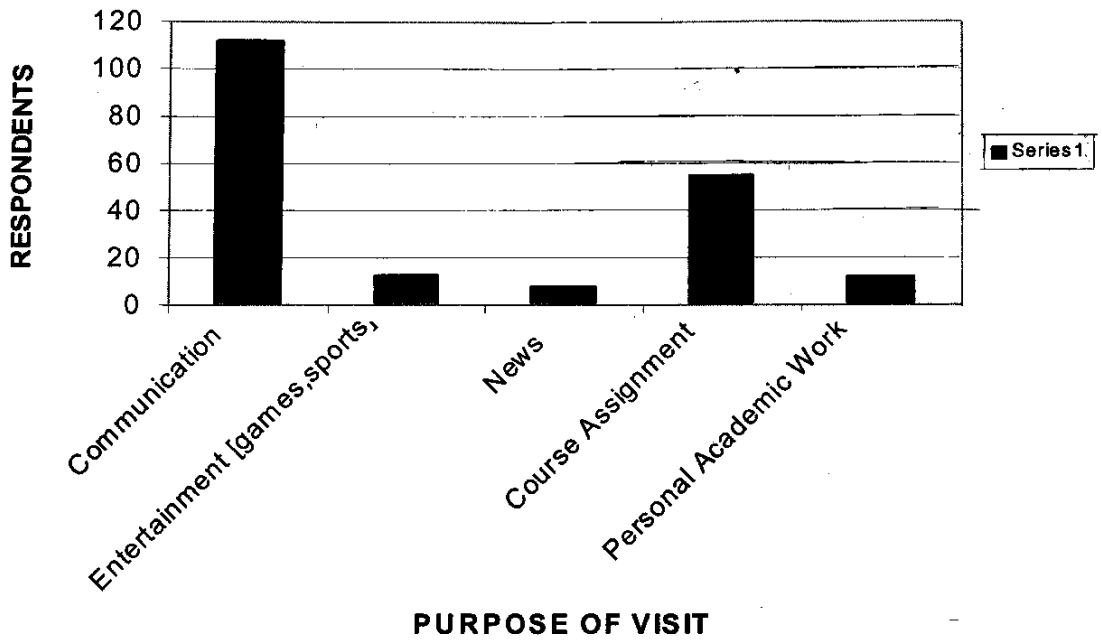

Figure 3: Bar-Chart showing students' responses on the purposes of visiting the internet

Figure 3 shows that students' main purpose of visiting internet sites is for communication [response on personal e-mail is most prominent]. Also, the use of internet for academic purpose is less prominent but distinct. However, the following purposes – entertainment, news and personal academic work are less distinctly represented.

Table 1: Ranking order of students' responses on benefits derived from their use of the internet.

Benefits	**Mean Score**	**Rank**
Source of academic material	0.23	3rd
Reduce boredom	0.29	2nd
Fastest means of communication	0.48	1st

Table 1 shows that the most significant benefit of internet from students' responses is that it serves as fastest means of communication rather than being a useful source of academic materials.

Table 2: Chi Square showing gender bias in students' purpose of using the internet

Variable	Male	Female	Total	X^2cal	X^2tab	df
Personal e-mail	46 [54.2]	66 [57.5]	112			
Entertainment	8 [23.0]	5 [10.0]	13			
News	5 [12.7]	3 [6.4]	8	2.61	9.49	4
Class Assignment	30 [38.0]	25 [36.1]	55			
Personal Academic Work	10 [22.3]	2 [30.0]	2			
	99	101	200			

Figures in parentheses [ ] represents the Expected frequencies

Table shows that X^2cal is less than X^2tab; this implies that there is no gender bias among students in their purposes of using the internet.

Discussion of Findings

This study has revealed that Internet facilities are quite accessible to the students. However, very few numbers of students access the Internet in the library (figures 1). Perhaps students have not realized the supplementary function of the Internet to the school library services. Proximity of Internet services to the students will aid them in searching for relevant information on academic matters that cannot be obtained directly in the library without delay or procrastination.

The study further revealed that students' use of the Internet is only occasional. This is unexpected bearing in mind that Internet is a reservoir of scholarly literature, knowledge and quick source of information. As revealed in this study, the main purpose of students visit to the Internet is for communication (checking e-mails and chatting) instead of them engaging in intensive search for relevant literature that touches the grey areas of academic work.

Another finding of this study showed that Internet as a means of communication was of greatest benefits to majority of the students. Also no gender bias in purpose was found among students.

The various findings of this study actually exposed the present bunch of undergraduate students as one that rely heavily on teachers dictate and therefore lack the research and study skills needed to excel in their academic endeavour. It implies therefore that students have not availed themselves the opportunity provided by the Internet.

There is convincing evidence that learners learn more effectively while using the internet. Watson (1993) investigated the impact of Internet use on pupils achievement in science and provided evidence that pupils spent longer time on learning, changes in pupils attitude and motivation for learning have also been observed. Also, Crook (1991) in a review of a range of Internet use in science curriculum showed that students using Internet took greater responsibilities of their own teaching. Internet therefore should be embraced by all students on matters relating to their academic pursuit.

Conclusion and Recommendations

The increasing dependency of science teaching on the Internet is inevitable. A shift in emphasis from the traditional teacher tailored approach to an individualistic global information technique is highly desirable. Therefore, conscious efforts should be made to improve computer literacy skills among the students. The low ICT content level at the tertiary education (Kalu and Ekwueme, 2003) should be enriched with some practical skills flavour. University teachers should endeavour to give enough follow-up activities that will encourage students to search for materials from the Internet. Nigeria as a country cannot afford to take a back seat.

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